



TOPIC: Aerospace

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In this issue, you'll find the tools to **explore...assess...and experience engineering!**

From a look into the world of the talented and active Shelly Brimmeier, a performance engineer for Gulfstream Aerospace, to a hands on activity to build a spectrograph and design a ground- or space-based mission, you'll recognize first-hand how even the sky is not the limit in aerospace engineering!

We need your input! Please take a moment to complete our quick [P-E Times reader survey](#) and we'll send you a free copy of Explore magazine. Enjoy!

EXPLORE...

Find your dream job, meet extreme engineers, watch videos

What Do Engineers Do?

Check out the complete profile at: <http://www.jets.org/explore/what/aerospace.cfm>

Aerospace Engineers make a difference in the world by...

- Ensuring the safety of today's aircraft by helping them meet mission critical requirements and engineering all components to work together properly to achieve their goals.
- Building a more spacious airplane.
- Creating satellites that detect drought around the world.
- Designing robots that collect samples on other planets, revealing insights about our galaxy.
- Getting down to Earth by designing high-speed trains, racing cars, or deep sea vessels that explore life at the bottom of the ocean.

Even the sky is not a limit in aerospace engineering! Today's aerospace engineers design, develop, test, and supervise the manufacturer of aircraft, spacecraft, satellites, and missiles. They are working to make space colonization a reality and reduce the time needed to travel around the world. Aerospace engineers apply their specialized knowledge of aerodynamics, thermo-fluid mechanics, propulsion, structures, dynamics, control, and performance to a wide variety of problems encountered in the design of vehicles or systems. They develop new technologies for use in aviation, defense systems, and space systems. They can also apply their expertise to the design and development of new earthbound vehicles — racecars, hydrofoil ships, deep-diving vessels for oceanographic research, and high-speed rail systems.

Did You Know?

- Dr. Mae C. Jemison, First African-American Astronaut, CEO, BioSentient Corporation, and Founder, The Earth We Share is a JETS Alum
- During their preparations for the Olympics, the U.S. Bobsled team used the wind tunnel in the aerospace engineering department at the University of Maryland to analyze how changes in the sled's design and its crew's positions would affect its time on the track.
- Michael Crichton's book "AirFrame" is a techno-thriller set in the aerospace industry. In addition to a suspenseful read, it provides great insight into airplane components and manufacturing.
- Jodi Foster played the role of an aeronautical engineer in the movie FlightPlan. The suspense takes place on an aircraft her character helped to design.

Salary:

The average starting Salary for an Aerospace Engineer (2007):

B.S. Degree	M.S. Degree	Ph.D.
\$53,408	\$62,459	\$73,814

Extreme Engineer: Shelly Brimmeier



Extreme Engineer Quote

I love my job because I'm constantly learning new things!"

What She Does

Shelly works at Gulfstream Aerospace in Savannah, GA as an Aircraft Performance Engineer. Shelly works on the many aspects of how an airplane actually flies and simulations from how the number of passengers and baggage impacts the amount of runway needed for takeoff, to how much fuel will be needed to fly from New York to Tokyo, or how much landing distance is required if the runway is dry, wet, icy, or snow covered.

Making a Difference

Shelly makes a difference by mentoring co-op students working at Gulfstream and promoting aerospace at local schools.

Shelly makes a difference by designing an airplane that flies faster and farther, saving valuable time.

Why Engineering?

Shelly's love for engineering started early. In the summers, her family visited Kennedy Space Center where she saw the Apollo capsule and the Atlas V rockets. When she was six years old she got to see a

launch up close from the VIP seats. "It was so loud that I could feel the vibrations in my chest, and it was so amazing to see the entire sky light up as the rocket blasted the shuttle into the air", said Shelly. Another influence was a visit to the Smithsonian Air and Space Museum in Washington D.C. where you could see the history of aviation and how it grew from gliders and the Wright Flyer through to the Space Shuttle.

Shelly noted that it was these experiences coupled with learning how to build things with her dad that helped her see how to use the knowledge learned in school to come up with solutions to real real-life situations.

Advice

"Getting involved in various activities is a great way to really learn a lot about all aspects of life", says Shelly. When she was only 12, she joined the Civil Air Patrol where she was able to foster her interest in aerospace, and learned to fly. She was also involved in photography club, jazz choir, debate team, science club, and played varsity soccer and ran hurdles in track.

Shelly also suggests taking advantage of co-op and internship opportunities while in college because this is a great way to experience a job first-hand to test it out and see if that career really is a good path for you. It is also a great way to experience a few different companies to see what different corporate cultures can offer.

Don't forget about professional organizations! Many for engineering are aimed at each specific discipline. Shelly has been a part of AIAA (American Institute of Aeronautics and Astronautics) since her freshman year in college, and notes that it has been a great resource for varied opportunities throughout her college and professional career. Shelly is very involved with K-12 outreach programs through AIAA and has worked on a new website called "Ask Polaris" aimed at answering questions that high school students interested in engineering and their parents have about going to college. Check it out at: <http://www.askpolaris.org>.

Hobbies

Shelly enjoys making wheel-thrown pottery, making jewelry, and sewing. She also takes dancing lessons, including swing, salsa and tango (but she says "don't look for me on dancing with the stars anytime soon!"). Shelly also enjoys camping with friends and has backpacked into and camped in the Grand Canyon and has traveled to Switzerland, Italy and Germany to honor her Italian and German!

Education

Shelly attended high school at North Hills High School, in the suburbs of Pittsburgh, PA, and graduated from Penn State in December of 2001, with a degree in Aerospace Engineering. In December 2008, she graduated with an MBA from Mercer University — her latest academic achievement!

ASSESS...

Find your strengths, prepare for the future



Discover Engineering as a Career

PathAssess is an online career tool for students showing how engineering can be a great career choice as it relates to their likes and dislikes.

<http://www.jets.org/programs/assess/index.cfm>

EXPERIENCE...

Get active and unlock the mysteries of engineering



Designing a Spectroscopy Mission

In this month's activity, Designing a Spectroscopy Mission, students find and calculate the angle that light is transmitted through a holographic diffraction grating using trigonometry. Download the complete activity at:

<http://www.jets.org/experience/engpathway/aerospace.cfm>



JETS Challenge: Apollo 12

Each Friday JETS posts a new challenge question. Use these challenges to warm up for TEAMS or NEDC competition, in your classroom for extra credit, or at an engineering club meeting. Check out this week's challenge at:

<http://www.jets.org/programs/challenge/index.cfm>